# Direct & undirect sensing two-axis solar tracking system

[1]DEVARAKONDA KRUPAKAR, [2] Prof K PRAHALADA RAO, [3] Prof B. CHANDRA MOHANA REDDY
[1]M.Tech Student, [2]RECTOR, [3] Head of the Department
[1,2&3] DEPARTMENT OF MECHANICAL ENGINEERING
JNTUA College Of Engineering, Anantapuramu-515002

**ABSTRACT:**

The main objective of the project to rotate panel in four direction in two different modes (A) With respect to light intensity and (B) With respect to real time clock. The Direct and undirect sensing two-axis solar tracking system consists of Solar panel, Two DC motors, LDR's,Motor driver, Switch, RTC module and Arduino Uno. Here we are changing two modes of solar tracking system with the help of switch. We are using four LDR sensors which are placed in four directions of solar panel to track light continuously. Two DC motors are placed under solar panel setup to the movement of solar panel. When there is any cloudy condition like heavy rain or fog we switch into RTC mode to rotate DC motors with respect to time.

Keywords: Arduino Uno, LDR, RTC, DC motor, Motor driver

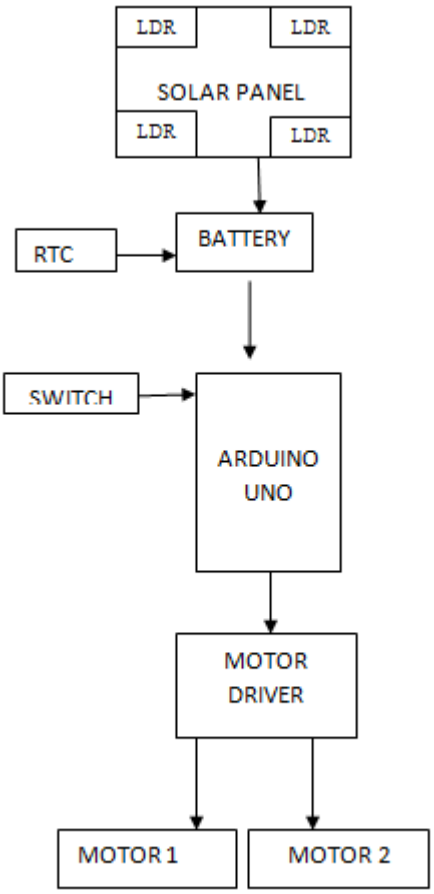
**Existing System:**

Now-a - days we use solar panel by fixing on terrace of the buildings which make to use solar energy for only some period. Since solar light fallen on the panel at fixed intervals of time. So we have to design solar tracker.

We are designing a solar tracker to operate w.r.t. to light as well as time. So we can observe maximum amount of energy.

**Proposed System:**

**BLOCKDIAGRAM:**

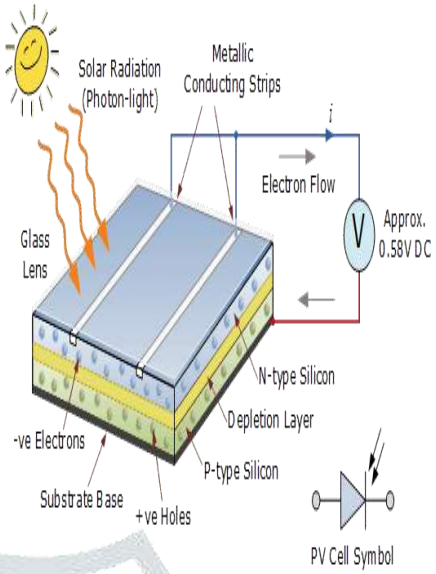



**ARDUINO:**

The Arduino Micro Controller is a open source platform which has 6 analog pins, 14 digital pins, one serial port, one power jack and one USB jack for code dumping.

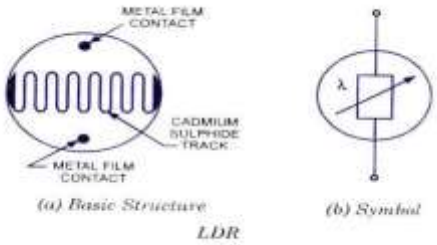

**Solar panel:**

Solar panel consists of a group of photo voltaic cells which observes solar light and generates current.



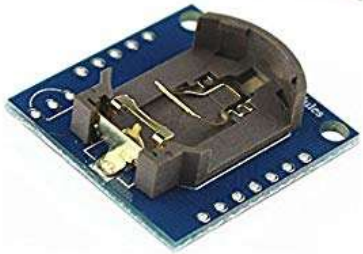

**LDR:**

Light Dependent Resistor(LDR) Which varies the value of resistance based on the light intensity.




**RTC:**

Real Time Clock(RTC) module Which works on the I2C protocol ,to generate time and date .

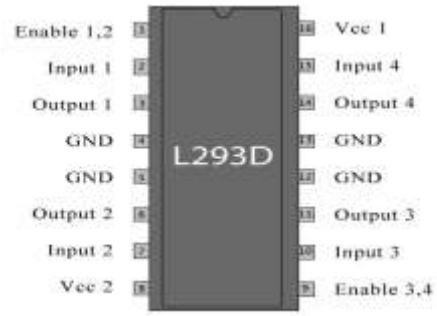


It has following pins:

- Vcc ,Gnd – power supply pins
- SDA – Serial Data
- SCL – Serial Clock

## Motor driver(L293D):

The motor driver is used to drive the two DC motors at a time.




## DC motor:

The motor is operated with DC voltages and available with different RPMs.

**Working of the project:**

In this dual axis solar system, the solar panel rotates in four direction based on two different modes, one is light intensity and another one is real time clock which depends the switch position. So it can observe maximum amount of solar energy. When the climate is bad we select real time clock mode. In normal conditions we use ldr inputs for solar panel rotation. The entire setup is controlled by arduino Uno.

**RESULTS:**

***The above figure shows solar panel setup***

***The above figure shows total assemble of components***

**Conclusion:**

The utilization of solar energy in very sophisticated manner is good environment. This entire setup can be used in different area of applications like home, industries,etc..,

REFERANCES

[1] Power from the sun. (n.d.). Retrieved from *http://www.powerfromthesun.net/Boo kl*

[2] The Sun's Position. (2013, March 28). Tn *Photovoltaic Education Network*, from http://pveducation.org/pvcdrom/properties-of-s unlightl s unsposition

[3] Zhan, T., Lin, W., Tsai, M. and Wang, G. Design and Implementation of the Dual-axis Solar Tracking System. TEEE.37th *Annual Computer Software and Applications Conference.* pp.276-277 (20 II)

[4] Zolkapli, M., AI-Junid S. A., Othman Z., Manut, A., and MohdZulkifli A. High-efficiency dual-axis solar tracking developement using Arduino .IEEE .*International Conference on Technology, Informatics, Management, Engineering & Environment.pp.43-47 (2013*